NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date:

Region: Asheville Regional Office
County: Caldwell
NC Facility ID: 1400204
Inspector's Name: Christopher Scott
Date of Last Inspection: 09/23/2016
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): Tapaha Dynamics, LLC

Facility Address:
Tapaha Dynamics, LLC
708 Lynhaven Drive
Lenoir, NC 28645

SIC: 7374 / Data Processing Services
NAICS: 51821 / Data Processing, Hosting, and Related Services

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0516, 02D .0521, 02D .0524, 02D .1111
NSPS: Subpart IIII
NESHAP: Subpart ZZZZ
PSD:
PSD Avoidance: 02Q .0317
NC Toxics:
112(r):
Other:

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Jon Rogers Datacenter Environmental and Safety Tech (828) 758-3888 708 Lynhaven Drive Lenoir, NC 28645	Christopher Williams Facility Manager (980) 222-1312 708 Lynhaven Drive Lenoir, NC 28645	Mario Kuhar Datacenter Env. & Reg. Comp. Manager (804) 839-6368 1600 Amphitheatre Parkway Mountain View, CA 94043

Application Data

Application Number: 1400204.14C
Date Received: 09/23/2014
Application Type: Modification
Application Schedule: TV-1st Time

Existing Permit Data
Existing Permit Number: 09733/R06
Existing Permit Issue Date: 09/26/2014
Existing Permit Expiration Date: 02/28/2017

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2014	0.0800	12.23	0.3500	2.97	0.3000	0.0101	0.0030 [Xylene, m-]
2013	0.1800	11.71	0.4100	6.50	0.4900	0.0188	0.0063 [Benzene]
2010	0.0500	2.49	0.0800	1.41	1.72	0.0016	0.0005 [Formaldehyde]

Review Engineer: Urva Patel

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 09733/T08
Permit Issue Date:
Permit Expiration Date:

1. Purpose of Application:

Currently, Tapaha Dynamics, LLC holds Air Permit No. 09733R06 with an expiration date of February 28, 2017.
Air Permit No. 09733R04 was issued on September 26, 2013 and had an expiration date of February 28, 2017. With the associated modification to add equipment, the permit also reclassified the facility from a synthetic minor facility to a Title V facility operating under a state permit. The permit contained a requirement that a Title V application be submitted within 12 months of the permit issuance. This application **(Application No. 1400204.14C)** fulfilled that requirement.

The facility has submitted an application for renewal of Air Permit No. 09733R06 which expires on February 28, 2017. The regional office of DAQ received this application on November 18, 2016. This application will be processed separately from the application for initial TV.

2. Facility Description:

Tapaha Dynamics, LLC is a data processing/storage facility in Lenoir, Caldwell County. It requires a substantial amount of dependable electrical power. The facility has 107 permitted emergency generators. The sources at this facility consist of diesel-fired generators used for emergency purposes only and are not used for peak shaving purposes. The emergency generator's potential-to-emit totals are based upon a maximum operating schedule of 500 hours per year per engine.

The emergency generators have belly diesel fuel storage tanks. The diesel fuel tanks are double-walled and equipped with vents to the atmosphere. The diesel fuel storage tanks are insignificant activities per 15 NCAC 02Q .0503(8).

The facility has thirty-eight (38) natural gas-fired heating units for a total potential of 14,380,500 Btu /hr for building heat. These heating units are insignificant activities per 15A NCAC 02Q .0503 (7) (d).

The facility has several non-contact cooling towers that are insignificant activities per 15A NCAC 02Q .0503 (8).

Tapaha Dynamics, LLC has a federally enforceable permit limit of 249.9 tons per year for nitrogen oxides (NOx) to remain a minor source under Prevention of Significant Deterioration (PSD). Emissions of Hazardous Air Pollutants (HAPs) are below the major source thresholds of 10 tons per year of any single HAP and 25 tons per year of all HAPs combined.

3. History / Background / Application Chronology:

Permit History Since Last Permit Renewal

December 14, 2007	The Air Permit No. 09733R01 issued. This permit included 54 Emergency Electricity Generators (2,000 kW, each) and the following insignificant activities: 15 non-contact wet cooling towers (2,500 GPM of cooling water, each), 24 non-contact cooling tower (1,300 GPM of cooling water, each), and 54 diesel fuel engine belly tanks
March 7, 2012	The Air Permit No. 09733R02 issued. Under this modification, the design capacity of 4 of previously permitted emergency generator (EG-51 through EG-54) changed from 2,000 kW to 750 kW.
July 20, 2012	The Air Permit No. 09733R03 issued. Under this modification, 2 emergency generator (EG-55 and EG-56; 2,000 kW, each) and 2 emergency generator (EG-57 and EG-58; 1,500 kW, each) were added to this permit. 4 diesel fuel engine belly tanks (4,500 G, each) were added in insignificant activities.
September 16, 2013	The Air Permit No. 09733R04 issued. The permit included: (1) removal of their synthetic minor permit limits and reclassification of the facility as a major facility under Title V; (2) addition of 16 emergency generators (2,500 kW, each), and one 2000 kW emergency generator (3) addition of several insignificant activities including 2 booster pump emergency generators (60 kW, each), a 99 HP diesel fire pump, 16 diesel storage tanks (5,500 gallons each), one diesel fuel storage tank (4,000 gallons) and four non-contact cooling towers (4,608 GPM each), and (4) removal of their 15A NCAC 2D .1100 permit condition. The permit retained their PSD avoidance limit to remain a minor source with respect to PSD. The facility has requested to process this application in two-steps.

May 13, 2014	The Air Permit No. 09733R05 issued. Under this modification, 4 of previously permitted emergency generators were modified from 750 kW to 1000 kW and the 2 proposed 60 kW booster pump emergency generators were removed from the insignificant activities list.
September 26, 2014	The Air Permit No. 09733R06 issued. Under this modification, the permit included addition of 32 emergency engines (2,750 kW, each); insignificant activities: 32 diesel fuel engine belly tanks, one for each generator set and 7 two-cell non-contact cooling towers. The facility has requested to process this application in two-steps.

Application Chronology

September 23, 2014	Received application for initial Title V Air Permit
June 6, 2016	Initial Title V application reassigned to Urva Patel.
October 21, 2016	Received Applicability Determination No. 2929 for a few insignificant activities.
November 23, 2016	Applicability Determination draft sent for comments.
November 29, 2016	Applicability Determination No. 2929 issued.
November 30, 2016	Received application (Application No. 1400204.16A) for renewal of Permit No. 09733R06.
December 12, 2016	Draft permit and permit review sent for internal/regional and facility review.
December 27, 2016	As per email from Mr. Jon Rogers, Facility no longer have fire pump and number of RTUs under insignificant sources has changed to 38 units for a total potential of 14,380,500 Total BTU/hr.
December 27, 2016	Emission source description for **ID No. I-CT** has changed based on comments on permit draft from Mr. Roger. It includes change in emission source description and number of cooling towers.

4. Summary of Changes to the Existing Permit (Permit No. 09733R06):

Page No.	Section	Description of Changes
Cover Letter	N/A	Updated cover letter for initial Title V; application, permit numbers, dates, PSD increment statement and Chief name.
Permit Cover	N/A	Inserted new issuance and complete application date and application number.
--	Insignificant Activities List	• Added "Natural Gas Fired Heating Units (I-NGHU): 14,380,500 Btu/hr total for 38 units combined" in the insignificant activity list." • Removed fire pump (**ID No. I-FP-1**) as the facility no longer use it • Minor change in emission source description of ID No. I-CT
	Section 2	• Updated regulation references from "2D" and "2Q" to "02D" and "02Q" to be consistent with regulation nomenclature.
	Section 2	• Renumbered this section to make them consistent with remainder of the permit and recent permit format.
Page 4	2.1 A.1	• Updated condition with most recent language.
Page 5	2.1 A.3	• Updated condition with most recent language.
Page 7	2.1 A.4	• Updated condition with most recent language.
Page 7	2.1 A.5	• Updated condition with most recent language.
	Section 3	• Section was revised from v.3.6 to current shell version 4.0 (12/17/2015). Only minor changes were made. Changes include: - Updating regulation references from "2D" and "2Q" to "02D" and "02Q" to be consistent with regulation nomenclature. • References to DENR were revised to DEQ

5. Compliance Status:

DAQ has reviewed the compliance status of this facility. During the most recent inspection conducted on September 23, 2016, Christopher Scott of the Asheville Regional Office indicated that the facility appeared to be in compliance with all applicable requirements. Additionally, a signed Title V Compliance Certification (Form E5) indicating that the facility was in compliance with all applicable requirements was submitted with Application No. 1400204.14C on September 23, 2014.

6. Regulatory Review

A. Fifty (50) 2,000 kW Emergency Generators – No. 2 Diesel (ID No. EG-1 through EG-50)
Four (4) 1,000 kW Emergency Generators – No. 2 Diesel (ID No. EG-51 thorough EG-54)
Two (2) 2,000 kW Emergency Generators – No. 2 Diesel (ID No. EG-55 and EG-56)
Two (2) 1,500 kW Emergency Generators – No. 2 Diesel (ID No. EG-57 and EG-58
One (1) 2,000 kW Emergency Generators – No. 2 Diesel (ID No. EG-59)
Sixteen (16) 2,500 kW Emergency Generators – No. 2 Diesel (ID No. EG-60 thorough EG-75)
Thirty-two (32) 2,750 kW Emergency Generators – No. 2 Diesel (ID No. EG-76 thorough EG-107).

Applicable Regulatory Requirements:

- 15A NCAC 02D .0516: Sulfur Dioxide Emissions from Combustion Sources
- 15A NCAC 02D .0521: Control of Visible Emissions
- 15A NCAC 02D .0524: New Source Performance Standards (Subpart IIII)
- 15A NCAC 02D .1111: Maximum Achievable Control Technology
- 15A NCAC 02Q .0317: Avoidance Conditions (Prevention of Significant Deterioration)
- 40 CFR 60, Subpart IIII
- 40 CFR 63, Subpart ZZZZ

- 15A NCAC 2D .0516: Sulfur Dioxide Emissions from Combustion Sources

All diesel-fired emergency generators (**ID Nos. EG-1 through EG-107**) are subject to 15 A NCAC 2D .0516: Sulfur Dioxide Emissions from Combustion Sources. This regulation limits SO_2 emissions from combustion sources to 2.3 pounds per million Btu of heat input. Diesel fuel is assumed to be equal to No. 2 fuel oil. The heat input for the worst case proposed generator is 26.39 mmBtu/hr.

Sulfur dioxide emissions for No. 2 fuel oil combustion are calculated using the equation AP-42 emission factor which is (1.01 * weight percent sulfur) lb/MMBtu (ref. AP-42 Table 3.4-1).
As per NSPS regulations, beginning October 1, 2007, the diesel fuel combusted must contain less than 500 ppm sulfur (0.05% by weight). Beginning October 1, 2010, the diesel fuel combusted must contain less than 15 ppm sulfur (0.0015% by weight).
Emission rates from these two fuels:
1.01*0.05 = 0.0505 lb/mmBtu
1.01*.0015 = 0.001515 lb/mmBtu
Based on a 0.05% sulfur content by weight, this emission factor is 0.0505 pounds per million Btu of heat input, which is worse case of the two diesel fuel standards. Because 0.0505 lb/million Btu < 2.3 lb/million Btu, compliance is indicated.

OR

Sulfur dioxide emissions for No. 2 fuel oil combustion are calculated using the manufacturer's emission factor which is 0.10 g/hp-hr. Highest rated Capacity of the emergency generator: 4034 hp

SO_2 emissions = 4034 hp * 0.10 g/hp-hr * 1/ (453.592 gm/lb)
= 0.89 lb/hr of SO_2
= 0.89 lb/hr of SO_2 / 26.39 mmBtu/hr
= 0.034 lb/mmBtu which is less than 2.3 lb/million Btu

Therefore, compliance is inherent. No monitoring, recordkeeping or reporting is required.

- 15A NCAC 2D .0521: Control of Visible Emissions

All diesel-fired emergency generators (**ID No. EG-1 through EG-107**) are subject to 15A NCAC 2D .0521: Control of Visible Emissions. For sources manufactured after July 1, 1971, the visible emissions from the facility shall not be more than 20 percent opacity when averaged over a six-minute period, except that six-minute periods averaging not more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period. No visible emissions are expected from combustion of diesel fuel. No monitoring, recordkeeping, or reporting is required.

- 15A NCAC 2D .0524: New Source Performance Standards

  On July 11, 2006, EPA promulgated NSPS "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines" in 40 CFR 60 Subpart IIII. All diesel-fired emergency generators (**ID Nos. EG-1 through EG-107**) are subject to 15A NCAC 2D .0524 and 40 CFR 60, Subpart IIII. As per 40 CFR §60.4200(a)(2), owners and operators of stationary compression ignition internal combustion engines (CI ICE) manufactured after April 1, 2006, are subject to NSPS, Subpart IIII requirements. The above generator's CI ICE will commence construction after July 11, 2005 and the engines are manufactured after April 1, 2006, hence, the proposed generators are subject to the requirements of the NSPS Subpart IIII.

  Emission Standards for Owners and Operators

  Per §60.4205(b), owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards for new non-road CI engines in §60.4202 for 2007 model year and later emergency stationary CI ICE.

  As per §60.4202(a)(2), the owner/operator must comply with the emission standards listed in §89.112, Table 1 and §89.113 for new non-road CI engines for 2006 model year and maximum engine power. According to §89.113 (a) and §60.4211(a), the Permittee shall comply with the visible emissions standards for non-road engines. However, the engines are assumed to be at "constant speed," and as such, they are exempt from the visible emissions compliance requirements (40 CFR §89.113(c)(3)). The emission rates allowed by NSPS, Subpart IIII are shown below.

Pollutant	NSPS Limits
NMHC + NO_X	6.4 g/kW-hr
CO	3.5 g/kW-hr
PM	0.20 g/kW-hr

  As per §60.4207(b), the owner/operator must use diesel fuel that meets the requirements of 40 CFR §80.510 (b), that is Sulfur content: 15 ppm maximum for NR diesel fuel sulfur. Continued compliance is expected.

  Monitoring/ Operation & Maintenance

  As per §60.4209, the emergency engines must be equipped with a non-resettable hour meter prior to startup of the engine. If the engine is equipped with a diesel particulate filter to comply with the emission standards in §60.4204, then the diesel particulate filter must be equipped with a backpressure monitor that notifies the owner/operator when the high backpressure limit of the engine is approached.

  As per §60.4211, the Permittee must install and configure the engine according to the manufacturer's specifications and operate and maintain each engine in accordance with the manufacturer's emission-related written instructions or procedures developed by the Permittee that are approved by the engine manufacturer. The Permittee may change only those emission-related settings that are permitted by the manufacturer. An emergency engine may be operated for maintenance and readiness checks for up to 100 hours per year. Operation during an actual emergency is not subject to a limit on hours. They are not allowed to operate as peak shaving generators.

  Testing

  Because the displacement of these emergency compression ignition internal combustion engines is less than 30 liters per cylinder for the model year 2007 and later, and the Permittee will use a certified engine to meet the emission standards in §60.4205(b), no performance testing is required.

  Notification, Reports and Records for Owners and Operators

  As per §60.4214(b), No initial notification is required for an emergency stationary internal combustion engine. However, the Permittee must keep records of all hours the engine is operated in emergency and non-emergency use (maintenance and readiness checks). If the engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached. Continued compliance is expected.

- 15A NCAC 2D .1111: Maximum Achievable Control Technology
  All diesel-fired emergency generators (**ID Nos. EG-1 through EG-107**) are subject to 15A NCAC 2D .1111: Maximum Achievable Control Technology and 40 CFR 63, Subpart ZZZZ: National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. According to 40 CFR §63.6595(c)(1), these diesel-fired generators meet the requirements of 40 CFR 63 Subpart ZZZZ by complying with requirements under 40 CFR Part 60 Subpart IIII for compression ignition engines, as they are new stationary RICE located at an area source. The facility is required to be in continued compliance.

- 15A NCAC 2Q .0317: Avoidance Conditions (Prevention of Significant Deterioration)
  The facility has potential to emit greater than 250 tons per year NOx emissions. Therefore, this facility has an avoidance condition which limits facility-wide NOx emissions to be less than 250 tpy and classified as a minor source under PSD. The Permittee wishes to retain this facility wide limit. The facility is required to be in continued compliance.

7. NSPS, NESHAP/MACT, NSR/PSD, 112(r), CAM

NSPS

This facility is subject to New Source Performance Standards (NSPS),

- 40 CFR 60, Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, is applicable to all diesel-fired emergency generators (**ID Nos. EG-1 through EG-107**). The facility is required to comply with all applicable provisions including the notification, testing, reporting, record-keeping, and monitoring requirements. The facility is required to be in continued compliance with these standards.

NESHAP/MACT

This facility is an area source for HAPs emissions and is subject to General Available Control Technology (GACT) standards under 40 CFR 63 Subpart ZZZZ. These standards for area sources apply to each emergency engine. Compliance is demonstrated through meeting NSPS Subpart IIII standards.

NSR/PSD

Tapaha Dynamics is a minor source with respect to PSD. The permit limits facility wide NOx emissions to less than 250 tpy. Potential emissions of all other criteria pollutants are below 250 tpy without limits. Caldwell County is in attainment or unclassified for all pollutants. Caldwell has not been triggered for increment consumption according to the memo "North Carolina Counties with Triggered PSD Minor Baseline Dates (for PM-10, SO and NOx).". See http://daq.state.nc.us/permits/psd/docs/mbd1.pdf

112(r)

This facility is **NOT** subject to the requirements of the Chemical Accident Release Prevention Program, Section 112(r) of the Clean Air Act requirements. This initial TV permit application does not change this status.

Compliance Assurance Monitoring (CAM)

Pursuant to 40 CFR 64.2, the provisions of the Compliance Assurance Monitoring (CAM) rule are applicable to emission units that meet all of the following criteria:

Criteria #1: The unit is subject to an emission limitation AND uses a control device to achieve compliance with the limit;
Criteria #2: The unit has pre-control potential emissions that are equal to or greater than 100% of the amount (in tpy) required for a source to be classified as a major source (i.e., 100 tpy of any criteria pollutant or 10 tpy of any HAP, North Carolina); and,
Criteria #3: The unit is not exempt under 40 CFR 64.2(b).

The following table summarizes CAM applicability at Tapaha Dynamics, LLC:

Emission Unit	Criteria #1: Does the Source Use a	Criteria #2: Pre-control PTE ≥100%	Criteria #3: Exempt Under	CAM Source?

	Control Device?	of major source thresholds?	40 CFR 64.2(b)?	
EG-1 through EG-107	No	No	No	No

8. Facility-Wide Air Toxics:

The permit contains modeled emission limits for several toxic air pollutants (TAPs) from the diesel-fired emergency generators (**ID Nos. EG-1 through EG-107**) under 15A NCAC 02D .1100. The diesel-fired emergency generators (**ID Nos. EG-1 through EG-107**) are subject to 40 CFR 63, Subpart ZZZZ. These emission sources (**ID Nos. EG-1 through EG-107**) are exempt from NC air toxics per 15A NCAC 02Q .0702(b)(27), provided they pose no unacceptable risk to human health.
Under revision R05, the facility requested that 15A NCAC 2D .1100 conditions be removed from their permit as it does not pose risk to human health. The DAQ has made the determination the permitted sources will not present risk to human health. For detailed information, please see Charles F. Yirka's **September 26, 2014** permit review.

9. Facility Emission Review:

Actual emissions for 2010 through 2014 are reported in the header of this permit review.

10. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA. Also pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice provided to the public under 02Q .0521 above. Tennessee is within 50 miles of the facility and will be notified accordingly.

11. Other Regulatory Considerations:

- Application fee of $922 is required for Permit Application No. 1400204.14C and was submitted with the permit application.
- A Professional Engineers Seal is required for Permit Application No. 1400204.14C and was provided in the permit application.
- A zoning consistency determination is required for Permit Application No. 1400204.14C. The facility has provided Zoning Consistency Determination with this application.
- A 30-day public notice and 45-day EPA review is required for this application.

12. Recommendations/Conclusion:

DAQ recommends the issuance of Air Permit No. 09733T08 to Tapaha Dynamics, LLC.